

OCT 23 2006

Atty. Dkt. No. 047711-0325

## REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 2 and 6-10 are currently being amended.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-18 are now pending in this application, and claim 18 is withdrawn from consideration.

Objection to the Claims

Claim 2 was objected to because of a minor informality. Applicant has amended claim 2 to correct the informality. The objection to claim 2 should now be withdrawn.

Rejections under 35 U.S.C. § 112

Claims 4-6 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Specifically, the Office Action argued that the claims lack essential steps because it was not clear "how those skilled in the art can conclude that colonies have active glucose oxidase by only measuring fluorescence or by using a substance that changes color in the presence of active glucose oxidase." Applicant respectfully traverses this rejection for at least the following reasons.

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Claims 4-6 depend, either directly or indirectly, from claim 1. Claim 1 recites the step of "screening the colonies to identify colonies with active glucose oxidase ...." As noted in the specification, "[t]he test to determine whether a given colony contains active glucose oxidase may be conducted in any of a variety of ways." Specification, paragraph [0032], lines 7-8. Claim 4 recites a particular embodiment of the "screening" step by "employing a substance that changes color in the presence of active glucose oxidase." Support for and description of this embodiment is found in the specification at paragraph [0032], lines 11-12. Similarly, support for the embodiment recited in claim 6 ("checking for fluorescence") is found in the specification at paragraph [0033], lines 2-4.

In light of the specification, the methods recited in claims 4-6 are sufficiently clear to one of skill in the art. Accordingly, the rejection of claims 4-6 under 35 U.S.C. § 112 should be withdrawn.

Claims 7-18 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Specifically, the Office Action argued that the metes and bounds of the term "functionality" were not clear. Applicant has amended claims 7-10 to more clearly recite the invention. Specifically, Applicant has amended claims 7-10 to recite a "predefined, desired functionality." Applicant notes that the specification describes an embodiment of the invention in which the screening procedure "involves determining whether a given glucose oxidase enzyme possesses the predefined, desired functionality." Specification, paragraph [0038], lines 1-2. As an example of the desired functionality, the specification discloses that screening for an enzyme "being prepared for a biosensor ... may involve testing whether a given glucose oxidase enzyme will work in a sensing device." Thus, claims 7-10, as amended, and claims 11-18 depending therefrom are now in definite form. Accordingly the rejection of claims 7-18 under 35 U.S.C. § 112 should be withdrawn.

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Rejections under 35 U.S.C. § 103

Claims 1-3 and 7-8 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the combination of Valdes et al (hereinafter "Valdes"), Hatzinikolaou et al. (hereinafter "Hatzinikolaou") and Stemmer. Further, claims 4-6 and 9-17 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the combination of Valdes, Hatzinikolaou and Stemmer and further in view of Wagner and Aldrich Catalog. Applicant respectfully traverses these rejections for at least the following reasons.

Embodiments of the present invention provide for methods for formulating an enzyme. One embodiment of the method, as recited in independent claim 1, includes "growing multiple colonies of" an organism with a glucose oxidase gene, "altering the environment of the colonies; and screening the colonies to identify colonies with active glucose oxidase."

The Office Action cites Valdes as substantially teaching the invention as recited in claim 1. However, as correctly noted by the Examiner, Valdes suggests "that degradation of glucose oxidase in a sensor may be prevented by using chemical agents, as suggested by Valdes et al." Office Action dated June 23, 2006, page 7, lines 9-11.

Valdes not only does not teach or suggest the features of the present invention, but also teaches away from the present invention. Valdes refers to conventional, known "additive" methods for addressing peroxide degradation of glucose oxidase. The Examiner argues that one of ordinary skill in the art would "use glucose oxidase mutants that are resistant to peroxide degradation." Office Action dated June 23, 2006, page 7, lines 9-13. However, such use is neither taught nor suggested by Valdes or any of the other cited references.

Further the Office Action argues that "combining the teachings of Valdes et al., Hatzinikolaou et al. and Stemmer, it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to formulate or produce glucose oxidases" according to the claimed invention. Office Action dated July 23, 2006, page 8, lines 12-19.

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However, the Examiner cites no suggestion or motivation in either Valdes, Hatzinikolaou or Stemmer. To the contrary, the prior art teaches that those most skilled in the art were taking a wholly different direction to address peroxide degradation of glucose oxidase and, thus, would have found it unreasonable to change the course of direction from that of the state of the art.

In particular, as noted above, Valdes refers to conventional, known "additive" methods for addressing peroxide degradation of glucose oxidase. Mutation of glucose oxidase genes and screening of mutated glucose oxidase for hydrogen peroxide resistant properties would have been a drastic departure from the state of the art and, without the benefit of the present specification as a guide, would not have been obvious to one of ordinary skill in the art.

More specifically, Valdes refers to completely different directions taken by those most skilled in the art, whereby the glucose oxidase enzyme is immobilized and attached to a support that deactivates peroxide. "A reference may be said to teach away when a person of ordinary skill, upon reading the reference, ... would be led in a direction divergent from the path that was taken by the applicant." *Tec Air, Inc. v. Denso Mfg. Mich. Inc.*, 192 F.3d 1353, 1360, 52 USPQ2d 1294, 1298 (Fed. Cir. 1999). Valdes directly refers the reader to conventional methods of addressing peroxide degradation of glucose oxidase that employ additives for destroying or neutralizing peroxide (which is quite different from creating a library of mutated genes and screening for desired peroxide resistant properties). As taught by Valdes:

"A long term remedy of the degradation of GOD by  $H_2O_2$  could be the immobilization and attachment of the enzyme to a support that deactivates  $H_2O_2$ , as it is being produced. Such as study was conducted by Cho<sup>2</sup>, using the peroxide decomposition catalyst, activated carbon. In a study conducted by Carter<sup>19</sup>, the best results were obtained with activated carbon, impregnated with ruthenium. This combination was able to destroy hydrogen peroxide and stabilized the enzyme." (Valdes, pg. 375, col. 1, line 18 to col. 2, line 6.)

Not only does Valdes fail to teach or suggest to mutate glucose oxidase and screen mutated glucose oxidase for peroxide resistance properties, but, in the above-quoted statement, Valdes further teaches to use other, very different procedures (conventional in the art) to address

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degradation effects of peroxide on glucose oxidase. Thus, the Valdes reference shows that the direction taken by those most skilled in the art involved employing materials, additives, or the like that deactivate peroxide.

The fact that the primary reference (Valdes) teach away from the claimed invention and the combination suggested by the Examiner shows that a *prima facie* case of obviousness has not been raised. Numerous Federal Circuit decisions recognize that an invention will not be deemed obvious in a patent law sense when one or more prior art references "teach away" from the invention. For example, the Federal Circuit stated "as a useful general rule, that references that teach away cannot serve to create a prima facie case of obviousness." *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1354, 60 USPQ2d 1001 (Fed. Cir. 2001).

Accordingly, the Office Action fails to establish a prima facie case of obviousness. Accordingly, claims 1-17 are patentable.

#### Conclusion

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-0872. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-0872. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37

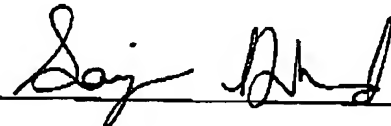
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C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-0872.

Respectfully submitted,

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